

LOAD COIL AND DSL REPEATER INCLUDING SAME

ABSTRACT OF THE DISCLOSURE

Systems and methods are disclosed for improving DSL performance, including ADSL and VDSL performance, over a local loop between a telephone company central
5 office and a customer premises. In particular, a DSL repeater is coupled to the local loop and amplifies downstream and upstream DSL signals to at least partially compensate for DSL signal attenuation that occurs as DSL signals pass over the local loop.

Pursuant to one embodiment, the DSL repeater includes a POTS load coil to improve the POTS, or voice band, transmission over the local loop. According to this
10 embodiment, the DSL repeater provides both improved POTS band signal transmission and DSL service.

One embodiment of the load coil includes a coupled inductor having compensating capacitors coupled thereto for counter-balancing the inter-winding capacitance of the coupled inductor. In another embodiment, the load coil includes a
15 high intra-winding capacitance for counter-balancing the inter-winding capacitance of a coupled inductor. Pursuant to yet another embodiment, the load coil comprises a pair of discrete, uncoupled inductors and a low intra-winding capacitance. Still another embodiment includes a pair of discrete, uncoupled inductors having a pair of compensating capacitors coupled thereto for counter-balancing the intra-winding
20 capacitance of the uncoupled inductors. Reducing, eliminating, or counter-balancing the capacitance of the load coil improves the impedance of the load coil to DSL signals improved, thereby permitting sufficient gain to be developed across the load coil.